IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT	:	**LI**, Lian-Chao et al.
SERIAL NO	:	10/628,296
FILED	:	July 28, 2003
TITLE	:	PLANT CELL WALL LOOSENING ACTIVITY OF GROUP 2/3 ALLERGENS OF GRASS POLLEN
Grp./A.U.	:	1638
Examiner	:	KUMAR, Vinod
Conf. No.	:	4176
Docket No.	:	P06331US01

DECLARATION OF DANIEL J. COSGROVE
UNDER 37 C.F.R. § 1.132

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

I, Daniel J. Cosgrove, hereby, declare:

1. I am a co-inventor of the above-identified application.

2. I received a Ph.D. from Stanford University in 1980 and B.S. from the University of Massachusetts in 1974. My research focuses on the cellular and molecular mechanisms of cell expansion.

3. I was elected to the National Academy of Sciences in 2005, which is considered one of the highest honors that can be accorded a U.S. scientist or engineer. My research has received the Alexander von Humboldt Research Award and the Penn State Faculty Scholar Medal for Outstanding Achievement in the Life Sciences in 1996, the Charles A. Shull Award for Outstanding Investigations in Plant Physiology in 1991, the Fulbright Senior Professor Award and a John Simon Guggenheim Fellowship in 1989, and the McKnight Foundation Award in

1986. In 1993, I was elected as a Fellow of the American Association for the Advancement of Science. I am also a member of the National Academy of Sciences and the International Society for Plant Molecular Biology. I am a member of the American Society of Plant Biologists (ASPB), where I served as the society's president from 2000 to 2001 and as chairman of the board for the ASPB Educational Foundation in 2002 and 2003. I have been a reviewer for *Science*, *Nature*, the *Proceedings of the National Academy of Sciences*, *Plant Molecular Biology*, *Plant Physiology*, *Plant Cell*, the *Canadian Journal of Botany*, *Plant Science Letters*, the *Journal of Theoretical Biology*, the *Journal of Experimental Botany*, the *American Journal of Botany*, and the *International Journal of Plant Sciences*, as well as several other professional journals.

4. I have authored and co-authored over 50 peer reviewed articles in scientific journals relating to the cellular and molecular mechanisms of cell expansion.

5. I have read the Office Action mailed June 12, 2007.

6. This Declaration is submitted herein to demonstrate that one skilled in the art would be able to identify additional group 2/3 allergens having β-expansin activity as described in the claims using the teachings of the Specification and techniques well-known prior to Applicant's filing date. This declaration is also submitted to show yet another example of a group 2/3 allergen which has β-expansin activity.

7. As disclosed and evidenced herein, this declaration presents results of experiments performed October 22-26, 2007. A group 2/3 allergen that is not the Lol p 3 and Phl p 2/3 described in the specification, for example at Figure 4, was isolated from a grass pollen using standard techniques. The group 2/3 allergen was assayed for cell wall extension of monocot cell walls, a β-expansin activity. The results of extension assays demonstrate that the additional

group 2/3 allergen has β-expansin activity as previously observed with Lol p 3 and Phl p 2/3. A report summarizing these results is attached and labeled as exhibit A.

8. The results indicate that one of ordinary skill in the art can make and use a solution with a pH from about 4.0 to about 7.5 having a group 2/3 allergen with β-expansin activity as described in the claims using routine techniques known at the time of filing.

9. The results indicate that the specification provides adequate detail and direction for one skilled in the art to identify additional group 2/3 allergens with β-expansin activity for use in the claims. Thus, one skilled in the art can recognize the identity of additional group 2/3 allergen members belonging to this genus and would recognize that Applicants were in possession of the invention at the time of filing.

10. I hereby declare that all statements made herein of my own knowledge are true, and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

Dated this Twelfth day of November, 2007

Daniel J. Cosgrove, Ph.D.

EXHIBIT A

Four replicate experiments showing induction of cell wall extension (creep) by addition of a novel maize group-2/3 allergen.

Procedure: Wheat coleoptile cell walls were heat inactivated and clamped in a constant force extensometer for 28 minutes in 20 mM Na acetate buffer, pH 5.5 + 5 mM dithiothritol. At 28 min the buffer was exchanged for one containing 300 ug/ml of native maize group-2/3 allergen protein purified by chromatographic methods from maize pollen extracts.

This graph plots increase in length (in micrometers) versus time (in minutes). Four closely overlapping curves are shown for the four samples. The increase in the rate of extension was immediate and sustained, characteristic of treatment with expansin.